

NETWORK TRENDS, 1993-1999



Supplemental Report #2

1999 ESRD Clinical Performance Measures Project

Opportunities to improve care for adult End-Stage Renal Disease patients

The Health Care Financing Administration

July 2000

INTRODUCTION

In July 1994, HCFA in collaboration with the eighteen ESRD Networks and the renal community implemented the ESRD Health Care Quality Improvement Program (HCQIP) in response to growing concerns about the quality of care for patients with chronic renal failure (1). The ESRD HCQIP goal was to improve patient outcomes by providing comparative information and technical support to assist health care providers improve care. The ESRD Core Indicators Project was initiated as the mechanism by which consistent clinical information could be obtained, analyzed and distributed back to dialysis caregivers. The purpose of the ESRD Core Indicators Project, now known as the ESRD Clinical Performance Measures (CPM) Project, is to assist providers of ESRD services in assessing and identifying opportunities to improve the care provided to adult (aged ≥ 18 years) in-center HD and adult PD patients.

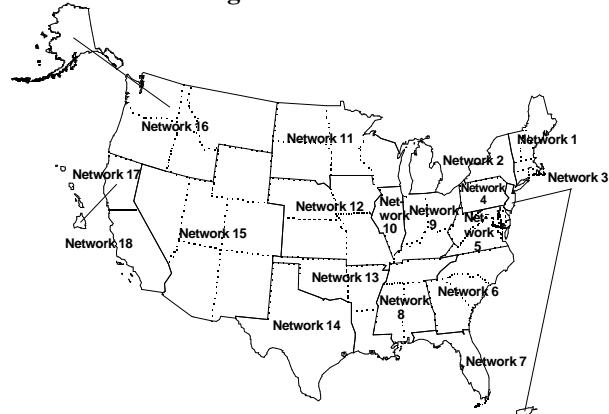
In addition to providing data on selected clinical measures to dialysis providers, HCFA contracts with the 18 ESRD Networks to provide technical support to dialysis facilities. This support is in the form of quality improvement projects (QIPs) which are designed to assist dialysis providers in their improvement efforts. Since 1994, Network QIP efforts have primarily focused on improving anemia management and adequacy of dialysis.

This Supplemental Report presents information on selected in-center hemodialysis patient characteristics, process measures, and intermediate outcomes by the 18 ESRD Network areas for the six years of the ESRD Core Indicators/CPMs Project to date (1993-1999) (Figure 1). The information is further consolidated or displayed by four HCFA Regions. Oversight of the ESRD Networks and their activities is coordinated by the HCFA Regional Offices located in Boston, Dallas, Kansas City and Seattle (see Figure 1).

No interpretation of the data is provided in this Report. In addition, brief summaries of quality

improvement projects conducted by some of the ESRD Networks throughout the United States are included. Due to space limitations, detailed descriptions of every quality improvement project conducted by the Networks from 1993 - 1999 are not presented. However, examples are offered which describe efforts conducted by some Networks within their associated HCFA Region.

Figure 1: ESRD Networks



HCFA Region

Boston
Dallas
Kansas City
Seattle

ESRD Networks

Networks 1, 2, 3, 4, 5
Networks 6, 7, 8, 13, 14
Networks 9, 10, 11, 12
Networks 15, 16, 17, 18

QUALITY IMPROVEMENT PROJECT EXAMPLES BY HCFA REGION

Boston Region

Anemia

One Network in this Region collaborated with a dialysis chain to address anemia management through the implementation of an anemia assessment

and treatment algorithm. The percent of patients with hematocrit < 33% decreased from 42% to 20% in intervention facilities, and from 39% to 31% in control facilities.

Adequacy of Dialysis

Projects conducted by Networks in this Region have provided inconclusive results. One Network attempted to improve adherence to the dialysis prescription. After the interventions, compliance with prescribed time on dialysis decreased from 72% to 66%, use of the prescribed dialyzer and the prescribed blood flow rate did not change. No control group data were submitted. Within another Network, both intervention and control groups experienced an increased percentage of patients with a delivered dialysis $\geq 65\%$ (from 84% to 92% in the intervention group and from 80% to 86% in the control group).

Dallas Region

Anemia

Examples of quality improvement interventions utilized by Networks in this region included data collection with feedback for comparison with other facilities, on-site instruction, regional workshops, mentoring, and off-site education. One Network began collecting facility-specific hematocrits in 1993. Quality improvement interventions included feedback of data to facilities and assisting facilities that had the greatest need for improvement. In 1998-2000, the Network co-sponsored a series of workshops on anemia management. Outcomes were monitored on a monthly basis, with on-going offers of assistance to facilities for improving processes. In 1993, only 37% of patients in this Network had a hematocrit $> 30\%$ and the mean hematocrit was 29.7%. In 1998, 82% of patients had hematocrits $> 30\%$, and the mean hematocrit was 34.0%. No control group was used for comparison purposes.

Adequacy of Dialysis

In 1993, only 32% of patients within one Network in this region had URRs $\geq 65\%$. Facilities within this Network that had more than 10% of patients with URRs $< 50\%$ were selected for intervention. Year-long interventions included provision of educational materials, workshops, monthly collection of facility-specific data, on-site visits, peer counseling, and technical assistance. After one year, the mean URR in the intervention facilities had increased an average of 7%, compared to 1.4% in non-targeted facilities.

Kansas City Region

Anemia

One Network in this region developed facility specific interventions focusing on specific facilities previously identified as having an opportunity for improvement that could be measured. The Network determined that these facilities showed inconsistencies in following protocols, a lack of a strong CQI base and a lack of available resources. The intervention consisted of providing feedback reports to these facilities and comparing facility data to network and national data. The MRB, Network staff, and facility staff worked as partners in improving the care for the patients at these facilities. In these ten facilities, the percent of patients with hematocrit $\geq 30\%$ increased from 68% to 79% over the nine-month intervention period. No control group was used for comparison purposes.

Adequacy of Dialysis

One Network worked with seven facilities to improve hemodialysis adequacy. The intervention consisted of providing feedback reports to these facilities and comparing facility data to network and national data. The MRB, network staff, and facility staff worked as partners in improving the care for the patients at these facilities. The overall percentage of patients with URR $\geq 65\%$ increased from 40% to 57%. In a second round of this project, the Network worked with thirteen facilities to improve hemodialysis adequacy; the mean URR increased from 54% to 69%. No control group was used for comparison purposes.

DESCRIPTION OF TABLES IN THIS REPORT

Trends in the demographic characteristics of in-center hemodialysis patients selected for inclusion in the Core Indicators/CPM Project in each Network are displayed in Table 1. Trends in the delivered adequacy of dialysis as measured by URR (mean URR and percent of patients with URR $\geq 65\%$) and Kt/V (mean Kt/V and percent of patients with Kt/V ≥ 1.2), by Network, Region and the U.S. are depicted in Tables 2 and 3. Network, regional, and national trends in selected process measures associated with delivering adequate dialysis, namely percent of patients dialyzed with a dialyzer KUf ≥ 20 mL/mm Hg/h and mean dialysis session length (minutes), are depicted in Table 4.

Network, regional, and national trends in the management of anemia are shown in Tables 5, 6, and 7. Table 5 depicts the percent of patients with mean

hematocrit > 30% and mean hematocrit (%) over the six year study period. Several iron management measures (percent of patients with mean transferrin saturation \geq 20%, percent of patients with mean serum ferritin concentration \geq 100 ng/mL, and percent of patients with intravenous iron prescribed) are trended in Table 6. Trends in Epoetin dosing are depicted in Table 7.

Table 8 shows the Network, regional, and U.S. trends in serum albumin values over the six-year study period. Both the percent of patients with serum albumin \geq 3.5/3.2 gm/dL (by the bromcresol green [BCG] or bromcresol purple [BCP] laboratory method) and the percent of patients with serum albumin \geq 4.0/3.7 gm/dL (by the bromcresol green [BCG] or bromcresol purple [BCP] laboratory method) are profiled.

Tables profiling intermediate outcome measures (URR, Kt/V, hematocrit, and serum albumin) also contain the associated Standardized Hospitalization Ratios (SHRs) and Standardized Mortality Ratios (SMRs) for the three-year period 1996-1998. (Tables 2,3,5, and 8) The University of Michigan Kidney and Epidemiology and Cost Center provided the SHR and SMR values contained in this Report.

The percent of patients with mean Kt/V \geq 1.2 (1996, 1997, and 1998) and with mean hemoglobin $>$ 10 gm/dL (1997 & 1998) in each Network is shown in Figure 2. Comparison national data are shown in each Figure.

NEXT STEPS

Staff at dialysis facilities, the eighteen ESRD Networks, and HCFA will continue to collaborate to identify further opportunities to improve care provided to dialysis patients in the U.S.

REFERENCES

1. McClellan, WM, Helgerson, SD, Frederick, PR, Wish, JB, McMullan M. Implementing the Health Care Quality Improvement Program in the Medicare ESRD program: A new era of quality improvement in ESRD. *Advances in Renal Replacement Therapies*. 2(2):89-94, 1995.

Table 1: In-center hemodialysis demographics by Network, 1993-1998*

Network 1	'93	'94	'95	'96	'97	'98
% male	53	49	54	54	59	58
% white	77	76	78	77	77	75
% black	18	19	19	17	18	20
Age (years)						
Mean ("S.D.)	61.6("15.7)	63.5("15.1)	62.8("15.6)	63.0("15.7)	63.2("15.5)	63.0("14.8)
Median	65	67	66	67	66	66
% DM^ as primary cause of ESRD	29	29	35	34	40	37
% HTN^^ as primary cause of ESRD	24	28	27	21	21	21
Duration of dialysis (years)						
Mean (" S.D.)	3.5("3.8)	3.4("4.1)	2.5("3.2)	3.4("3.7)	3.2("3.7)	3.0("3.3)
Median	2.1	1.8	1.4	2.3	2.1	1.9
Post-dialysis body weight (kg)^^^						
Mean (+ S.D.)	X	X	71.7("19.6)	70.9("20.2)	72.0("20.6)	71.7("19.3)
Median	X	X	68.3	67.8	69.3	69.8

Network 2	'93	'94	'95	'96	'97	'98
% male	X	51	54	55	52	55
% white	X	48	47	50	52	38
% black	X	42	41	40	40	47
Age (years)						
Mean ("S.D.)	X	58.2("15.8)	59.7("15.5)	59.0("15.1)	60.3("15.0)	59.2("14.3)
Median	X	60	62	62	62	60
% DM^ as primary cause of ESRD	X	32	33	32	32	36
% HTN^^ as primary cause of ESRD	X	28	27	27	26	25
Duration of dialysis (years)						
Mean (" S.D.)	X	3.8("4.0)	3.4("3.8)	3.7("4.2)	4.2("4.7)	3.5("3.8)
Median	X	2.5	2.1	2.1	2.7	2.3
Post-dialysis body weight (kg)^^^						
Mean ("S.D.)	X	X	70.0("16.8)	68.9("18.5)	71.0("18.2)	73.3("17.6)
Median	X	X	68.0	67.0	68.6	70.8

Table 1: In-center hemodialysis demographics by Network, 1993-1998* Con't.

Network 3	'93	'94	'95	'96	'97	'98
% male	55	54	59	56	61	60
% white	60	63	52	53	50	42
% black	33	28	33	34	33	37
Age (years)						
Mean ("S.D.)	58.6("15.0)	58.9("15.6)	61.2("14.2)	60.6("14.7)	61.1("14.3)	60.7("14.9)
Median	60	61	63	63	63	62
% DM^ as primary cause of ESRD	38	35	40	35	40	45
% HTN^^ as primary cause of ESRD	22	28	23	26	27	22
Duration of dialysis (years)						
Mean (" S.D.)	3.4("4.0)	3.2("3.8)	3.4("3.8)	3.7("3.6)	3.4("3.7)	3.5("4.0)
Median	1.9	1.8	2.1	2.7	2.2	2.1
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	69.7("16.1)	68.4("15.6)	70.5("18.5)	70.1("17.3)
Median	X	X	67.7	66.2	68.0	68.7
Network 4	'93	'94	'95	'96	'97	'98
% male	53	51	53	52	58	54
% white	66	62	62	64	63	59
% black	32	37	36	34	36	39
Age (years)						
Mean ("S.D.)	62.7("14.2)	62.5("14.7)	62.8("14.4)	61.3("15.1)	62.0("14.8)	61.4("14.6)
Median	66	66	65	64	65	64
% DM^ as primary cause of ESRD	34	36	39	37	34	40
% HTN^^ as primary cause of ESRD	31	30	29	26	26	21
Duration of dialysis (years)						
Mean (" S.D.)	3.2("3.6)	3.2("3.5)	3.4("3.6)	2.8("3.1)	3.3("3.4)	3.0("3.4)
Median	2.0	1.9	2.1	1.7	2.2	1.9
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	72.5("19.8)	72.2("17.4)	72.9("19.2)	73.4("20.3)
Median	X	X	70.2	71.0	70.6	70.3

Table 1: In-center hemodialysis demographics by Network, 1993-1998* Con't.

Network 5	'93	'94	'95	'96	'97	'98
% male	48	50	49	51	54	53
% white	33	35	29	32	37	33
% black	66	63	65	64	59	63
Age (years)						
Mean ("S.D.)	57.6("14.7)	57.9("15.3)	59.2("14.6)	58.1("14.6)	59.6("14.9)	59.4("14.9)
Median	60	60.5	60	60	61	62
% DM^ as primary cause of ESRD	30	30	32	36	35	38
% HTN^^ as primary cause of ESRD	38	39	37	35	35	32
Duration of dialysis (years)						
Mean (" S.D.)	3.6("3.8)	3.3("3.4)	3.3("3.2)	3.6("3.8)	3.3("3.3)	3.7("4.0)
Median	2.2	2.2	2.4	2.3	2.4	2.3
Post-dialysis body weight (kg)^^^						
Mean (+ S.D.)	X	X	70.4("16.9)	72.5("19.6)	71.6("18.4)	72.9("19.0)
Median	X	X	69.0	70.5	68.5	70.8
Network 6	'93	'94	'95	'96	'97	'98
% male	52	45	46	44	42	49
% white	25	25	24	28	28	23
% black	73	74	74	69	68	73
Age (years)						
Mean ("S.D.)	56.8("15.1)	58.0("15.3)	57.7("13.3)	58.7(+ "14.0)	59.7("14.8)	57.9("14.4)
Median	59	59	58	60	62	59
% DM^ as primary cause of ESRD	27	32	37	33	41	40
% HTN^^ as primary cause of ESRD	40	43	40	39	34	34
Duration of dialysis (years)						
Mean (" S.D.)	-	3.1("3.3)	3.5("3.8)	3.9("4.0)	3.2("3.2)	3.6("3.8)
Median	-	1.8	2.4	2.7	2.2	2.5
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	76.4("19.5)	71.7("17.2)	71.7("18.4)	75.4("20.5)
Median	X	X	74.0	69.6	69.5	73.1

Table 1: In-center hemodialysis demographics by Network, 1993-1998* Con't.

Network 7	'93	'94	'95	'96	'97	'98
% male	50	55	58	58	57	56
% white	51	61	60	47	55	59
% black	48	37	39	48	42	38
Age (years)						
Mean ("S.D.)	60.6("15.0)	61.2("15.7)	61.8("15.0)	60.9("15.4)	62.1("15.6)	61.1("15.7)
Median	63	64	65	63.5	66	64
% DM^ as primary cause of ESRD	30	29	31	33	37	41
% HTN^^ as primary cause of ESRD	13	38	36	35	34	26
Duration of dialysis (years)						
Mean (" S.D.)	3.4("4.0)	3.5("3.9)	3.2("3.5)	3.6("4.0)	3.2("3.4)	3.6("4.0)
Median	2.1	2.2	2.0	2.1	2.1	2.2
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	72.9("17.6)	72.9("16.3)	71.0("17.0)	72.5("18.9)
Median	X	X	70.0	72.0	70.7	69.4
Network 8	'93	'94	'95	'96	'97	'98
% male	53	46	47	51	51	51
% white	35	35	32	36	36	34
% black	65	64	67	60	62	65
Age (years)						
Mean (S.D.)	58.7("14.2)	58.6("15.0)	58.9("14.9)	59.1("14.5)	57.6("15.2)	58.8("14.7)
Median	61	61	61	60.5	59	60
% DM^ as primary cause of ESRD	31	34	29	33	36	35
% HTN^^ as primary cause of ESRD	40	38	39	34	35	35
Duration of dialysis (years)						
Mean (" S.D.)	3.5("3.4)	3.3("3.5)	3.8("3.8)	3.7("3.9)	3.7("3.9)	4.1("4.3)
Median	2.5	2.1	2.6	2.4	2.3	2.6
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	75.8("20.2)	73.5("19.7)	75.1("20.9)	76.8("21.7)
Median	X	X	72.5	70.8	72.0	71.6

Table 1: In-center hemodialysis demographics by Network, 1993-1998* Con't.

Network 9	'93	'94	'95	'96	'97	'98
% male	50	51	48	47	54	50
% white	58	57	58	58	56	59
% black	41	40	41	37	42	38
Age (years)						
Mean ("S.D.)	58.7("15.6)	60.3("15.3)	59.7("15.0)	62.5("15.1)	61.3("15.4)	61.8("15.3)
Median	61	64	62	66	64	65
% DM^ as primary cause of ESRD	34	38	39	42	42	38
% HTN^^ as primary cause of ESRD	29	27	26	24	28	25
Duration of dialysis (years)						
Mean (" S.D.)	3.0("3.3)	3.2("3.7)	3.3("3.5)	3.2("3.3)	3.2("3.3)	2.7("2.9)
Median	2.1	1.9	2.1	2.0	2.0	1.8
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	74.2("20.6)	74.5("21.0)	73.5("18.5)	74.4("19.5)
Median	X	X	71.7	70.4	70.9	73.4
Network 10	'93	'94	'95	'96	'97	'98
% male	X	56	53	53	53	49
% white	X	48	53	46	42	50
% black	X	49	41	48	48	45
Age (years)						
Mean ("S.D.)	X	60.6("15.9)	61.2("14.8)	59.9("15.2)	61.7("14.7)	61.2("14.7)
Median	X	64.5	64	62	64	63
% DM^ as primary cause of ESRD	X	18	30	36	37	38
% HTN^^ as primary cause of ESRD	X	47	31	34	35	34
Duration of dialysis (years)						
Mean (" S.D.)	X	3.1("3.2)	3.3("3.7)	3.3("3.9)	3.7("4.1)	3.0("3.4)
Median	X	2.0	2.1	2.0	2.4	1.9
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	73.4("19.8)	74.1("21.2)	73.2("19.8)	73.4("19.6)
Median	X	X	72.0	70.3	70.2	70.2

Table 1: In-center hemodialysis demographics by Network, 1993-1998* Con't.

Network 11	'93	'94	'95	'96	'97	'98
% male	53	56	60	55	52	57
% white	61	63	63	58	58	62
% black	34	34	33	35	38	32
Age (years)						
Mean ("S.D.)	59.0("16.7)	60.7("15.4)	61.4("15.2)	61.3("16.1)	60.4("16.4)	61.3("15.3)
Median	62	64	65	65	64	63
% DM^ as primary cause of ESRD	35	39	34	40	34	44
% HTN^^ as primary cause of ESRD	29	28	27	25	26	23
Duration of dialysis (years)						
Mean (" S.D.)	3.3("4.0)	3.3("3.5)	3.6("4.5)	3.5("3.7)	3.6("3.8)	2.9("3.4)
Median	1.8	2.0	2.2	2.2	2.2	1.8
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	74.5("19.1)	72.9("18.8)	73.4("19.6)	76.0("21.2)
Median	X	X	72.0	70.4	70.6	72.1

Network 12	'93	'94	'95	'96	'97	'98
% male	49	50	50	51	54	52
% white	62	64	66	66	65	63
% black	36	30	28	30	22	33
Age (years)						
Mean ("S.D.)	59.7("16.0)	61.2("14.8)	61.4("15.6)	62.0("15.6)	61.1("15.4)	61.9("15.2)
Median	63	64	63	66	63	64
% DM^ as primary cause of ESRD	28	35	35	41	37	40
% HTN^^ as primary cause of ESRD	35	35	29	26	25	27
Duration of dialysis (years)						
Mean (" S.D.)	3.3("3.4)	3.2("3.4)	3.2("3.8)	3.2("3.5)	3.2("3.4)	3.1("3.6)
Median	2.1	2.0	1.8	2.1	2.2	2.0
Post-dialysis body weight (kg)^^^						
Mean (" S.D.)	X	X	73.7("20.1)	74.6("22.0)	74.0("19.0)	74.6("19.0)
Median	X	X	69.7	70.4	71.2	72.2

Table 1: In-center hemodialysis demographics by Network, 1993-1998* Con't.

Network 13	'93	'94	'95	'96	'97	'98
% male	47	52	43	53	52	54
% white	34	41	36	38	35	39
% black	62	56	58	56	59	56
Age (years)						
Mean ("S.D.)	58.2("15.0)	59.1("15.5)	59.2("14.7)	58.2("15.4)	58.8("15.4)	58.1("15.2)
Median	61	61	61	61	62	60
% DM^ as primary cause of ESRD	35	37	38	39	42	39
% HTN^^ as primary cause of ESRD	23	22	38	34	33	37
Duration of dialysis (years)						
Mean (" S.D.)	3.6("3.8)	3.4("3.5)	3.3("3.7)	3.3("3.6)	3.3("3.7)	3.0("3.1)
Median	2.3	2.1	2.0	2.1	2.0	1.9
Post-dialysis body weight (kg)^^^						
Mean (+ S.D.)	X	X	75.5("21.1)	74.3("19.6)	72.9("20.4)	75.2("19.2)
Median	X	X	71.3	71.8	69.2	72.3
Network 14	'93	'94	'95	'96	'97	'98
% male	46	51	45	49	50	51
% white	63	47	40	57	42	38
% black	34	36	34	34	34	35
Age (years)						
Mean ("S.D.)	58.2("15.4)	57.7("15.2)	58.1("15.5)	56.4("15.6)	59.4("15.0)	58.6("15.0)
Median	62	61	60	57	61	60
% DM^ as primary cause of ESRD	42	43	43	47	47	49
% HTN^^ as primary cause of ESRD	28	27	27	20	23	22
Duration of dialysis (years)						
Mean (" S.D.)	3.2("3.4)	3.8("4.2)	3.4("3.4)	3.8("4.2)	3.5("4.1)	3.5("3.7)
Median	1.9	2.2	2.5	2.3	2.0	2.2
Post-dialysis body weight (kg)^^^						
Mean ("S.D.)	X	X	71.5("19.2)	70.7("18.7)	72.8("19.3)	75.1("20.4)
Median	X	X	68.0	67.7	69.6	72.5

Table 1: In-center hemodialysis demographics by Network, 1993-1998* Con't.

Network 15	'93	'94	'95	'96	'97	'98
% male	49	54	57	51	52	53
% white	71	73	72	63	70	66
% black	11	8	10	11	8	8
Age (years)						
Mean ("S.D.)	57.1("15.1)	58.2("15.3)	58.2("15.8)	59.1("16.5)	59.8("15.0)	59.3("15.1)
Median	60	61	59	60	62	61
% DM^ as primary cause of ESRD	47	45	46	48	51	55
% HTN^^ as primary cause of ESRD	18	18	19	15	15	12
Duration of dialysis (years)						
Mean (" S.D.)	3.3("3.6)	3.1("3.3)	3.8("4.0)	3.4("3.6)	3.3("3.6)	3.3("3.2)
Median	2.0	2.0	2.4	2.1	2.0	2.2
Post-dialysis body weight (kg)^^^						
Mean (+ S.D.)	X	X	69.5("16.8)	69.0("16.5)	70.3("18.0)	73.1("19.9)
Median	X	X	69.0	68.1	67.6	70.0
Network 16	'93	'94	'95	'96	'97	'98
% male	62	52	56	57	52	54
% white	78	84	78	76	71	76
% black	13	10	11	11	12	11
Age (years)						
Mean ("S.D.)	57.8("15.9)	59.3("15.5)	58.8("16.7)	59.1("15.5)	59.5("16.1)	60.8("15.5)
Median	61.5	63	63	61	60	63
% DM^ as primary cause of ESRD	33	33	33	37	40	38
% HTN^^ as primary cause of ESRD	19	21	20	16	17	15
Duration of dialysis (years)						
Mean (" S.D.)	3.8("4.5)	3.5("3.9)	4.1("4.9)	3.8("4.3)	3.4("4.2)	3.9("4.5)
Median	2.3	2.3	2.2	2.2	2.2	2.6
Post-dialysis body weight (kg)^^^						
Mean ("S.D.)	X	X	74.7("19.2)	72.3("17.9)	73.6("22.5)	73.7("20.0)
Median	X	X	72.0	70.0	69.8	70.6

Table 1: In-center hemodialysis demographics by Network, 1993-1998* Con't.

Network 17	'93	'94	'95	'96	'97	'98
% male	52	53	53	52	50	51
% white	48	44	35	42	30	31
% black	22	21	19	22	19	17
Age (years)						
Mean ("S.D.)	59.2("15.5)	59.4("15.7)	60.6("16.3)	59.9("14.5)	61.4("15.2)	59.9("15.0)
Median	62	62	64	62	65	62
% DM^ as primary cause of ESRD	36	35	39	40	41	46
% HTN^^ as primary cause of ESRD	24	28	24	25	24	23
Duration of dialysis (years)						
Mean (" S.D.)	3.4("3.8)	3.7("4.4)	3.6("3.9)	3.9("3.6)	3.2("3.2)	3.5("3.9)
Median	2.0	2.2	2.2	2.6	2.1	2.4
Post-dialysis body weight (kg)^^^						
Mean (+ S.D.)	X	X	67.6("17.0)	69.6("18.9)	69.6("21.4)	69.3("19.8)
Median	X	X	65.2	67.9	65.6	66.8

Network 18	'93	'94	'95	'96	'97	'98
% male	48	48	47	52	51	54
% white	68	67	65	55	63	61
% black	22	20	22	22	18	22
Age (years)						
Mean ("S.D.)	60.0("14.9)	58.6("15.9)	58.9("16.3)	59.3("15.9)	60.2("16.0)	60.0("16.5)
Median	62	59.5	62	63	63	63
% DM^ as primary cause of ESRD	42	36	40	42	40	44
% HTN^^ as primary cause of ESRD	29	30	29	26	24	27
Duration of dialysis (years)						
Mean (" S.D.)	3.2("4.9)	3.4("3.8)	3.6("4.1)	3.5("3.7)	3.4("3.8)	3.0("3.4)
Median	1.9	2.1	2.1	2.4	2.3	1.9
Post-dialysis body weight (kg)^^^						
Mean ("S.D.)	X	X	69.3("17.3)	67.2("17.3)	67.2("16.6)	69.0("18.3)
Median	X	X	67.7	64.4	64.5	67.2

* Sixteen Network areas participated in the first ESRD Core Indicators assessment (October-December 1993; all Network areas participated in subsequent years.

^DM= diabetes mellitus

^^HTN= hypertension

^^^ for data from last quarter of 1995 only, patient weight was recorded. It is not known if the weight recorded was the post-dialysis weight.

X= data not collected that study year

Table 2: Trends in URR by Network, HCFA Region, and US, 1993-1998[^]

Network	Percent of Patients with Mean URR>65%						mean URR (%)						SHR ('96-'98)	SMR ('96-'98)
	'93	'94	'95	'96	'97	'98	'93	'94	'95	'96	'97	'98		
1	53	62	65	77	77	77	65.3	65.6	67.1	68.3	68.7	69.0	1.01	0.92
2	-	43	52	59	70	70	-	62.4	64.4	65.7	67.8	67.4	0.99	0.97
3	29	33	48	71	72	75	60.2	61.4	63.8	67.3	67.6	68.4	1.10	1.06
4	42	46	70	69	76	78	62.7	63.3	67.0	66.9	68.8	69.5	1.14	1.03
5	36	42	56	57	65	74	60.8	62.2	64.8	64.8	66.8	67.7	1.05	1.06
6	32	49	56	72	75	70	61.1	64.0	64.6	67.0	68.2	66.7	1.08	1.04
7	44	56	61	65	72	73	62.9	64.8	65.3	66.1	67.9	67.6	1.02	1.01
8	39	46	63	71	71	77	60.8	63.9	65.7	67.1	67.8	68.8	1.04	1.04
9	41	54	56	69	72	76	63.1	64.4	65.4	67.0	67.9	68.7	1.05	1.06
10	-	42	51	56	66	69	-	62.6	63.8	64.9	67.0	67.4	1.07	1.04
11	39	46	57	64	69	73	62.2	63.2	64.5	65.6	67.3	67.8	0.94	0.97
12	54	61	60	74	76	76	64.5	65.9	66.2	68.2	68.6	68.9	0.97	1.01
13	33	34	56	59	68	68	60.9	61.7	65.1	65.6	66.5	67.4	1.18	1.13
14	53	57	70	74	78	81	64.6	65.1	67.2	68.2	69.3	69.9	0.99	0.91
15	57	59	66	80	75	79	65.8	65.5	67.1	68.9	69.1	69.6	0.91	0.92
16	53	62	67	68	74	78	64.8	65.8	67.2	67.2	68.5	69.0	0.86	0.98
17	43	47	55	70	71	72	62.3	63.5	65.1	67.7	68.0	68.6	0.94	0.99
18	48	51	62	71	73	71	64.0	63.9	65.8	67.7	68.2	68.1	0.95	0.89
HCFA Region														
Boston	40	45	58	67	72	75	62.2	63.0	65.3	66.6	67.9	68.4	1.05	1.01
Dallas	40	48	61	68	73	74	62.1	63.9	65.6	66.8	67.9	68.0	1.05	1.01
Kansas City	44	50	56	65	71	74	63.3	64.0	64.9	66.4	67.7	68.1	1.01	1.02
Seattle	50	54	62	72	73	75	64.1	64.6	66.2	67.9	68.5	68.7	0.93	0.94
US	43	49	59	68	72	74	62.7	63.8	65.5	66.8	68.0	68.2	1.02	1.00

[^]Sixteen Network areas participated in the first ESRD Core Indicators assessment (October-December 1993; all Network areas participated in subsequent years.

- data not available

Boston HCFA Region contains Networks 1-5.

Dallas HCFA Region contains Networks 6-8, 13-14.

Kansas City HCFA Region contains Networks 9-12.

Seattle HCFA Region contains Networks 15-18.

Table 3: Trends in Kt/V by Network, HCFA Region, and US, 1996-1998

Network	Percent of patients with mean Kt/V>1.2			Mean Kt/V			SHR ('96-'98)	SMR ('96-'98)
	'96	'97	'98	'96	'97	'98		
1	82	83	83	1.38	1.41	1.43	1.01	0.92
2	64	77	77	1.33	1.39	1.37	0.99	0.97
3	76	75	84	1.35	1.37	1.41	1.10	1.06
4	72	83	84	1.34	1.41	1.45	1.14	1.03
5	61	71	79	1.27	1.34	1.37	1.05	1.06
6	78	80	77	1.34	1.39	1.36	1.08	1.04
7	73	79	79	1.31	1.38	1.37	1.02	1.01
8	78	80	82	1.36	1.39	1.42	1.04	1.04
9	72	79	81	1.32	1.38	1.42	1.05	1.06
10	63	73	74	1.28	1.35	1.39	1.07	1.04
11	68	75	77	1.29	1.35	1.37	0.94	0.97
12	78	79	82	1.40	1.41	1.41	0.97	1.01
13	71	75	76	1.30	1.34	1.38	1.18	1.13
14	82	84	87	1.42	1.45	1.47	0.99	0.91
15	85	81	84	1.41	1.44	1.46	0.91	0.92
16	74	79	83	1.35	1.42	1.43	0.86	0.98
17	77	76	80	1.37	1.37	1.42	0.94	0.99
18	76	78	78	1.38	1.39	1.40	0.95	0.89
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HCFA Region								
Boston	71	78	82	1.33	1.38	1.40	1.05	1.01
Dallas	76	80	80	1.35	1.39	1.40	1.05	1.01
Kansas City	70	77	78	1.32	1.37	1.40	1.01	1.02
Seattle	78	78	81	1.38	1.40	1.42	0.93	0.94
US	74	78	80	1.34	1.39	1.40	1.02	1.00

Boston HCFA Region contains Networks 1-5.

Dallas HCFA Region contains Networks 6-8, 13-14.

Kansas City HCFA Region contains Networks 9-12.

Seattle HCFA Region contains Networks 15-18.

Table 4: Trends in dialysis adequacy process measures by Network, HCFA Region, and US 1993-1998[^]

Network	Percent of patients dialyzed with dialyzers with Kuf\$20						mean dialysis session length (minutes)					
	'93	'94	'95	'96	'97	'98	'93	'94	'95	'96	'97	'98
1	51	54	64	64	68	74	193	194	199	204	209	207
2	-	22	23	27	29	43	-	203	207	208	211	212
3	11	14	22	25	31	31	200	203	207	214	218	217
4	14	21	29	33	44	52	211	213	216	219	222	223
5	28	36	51	48	55	65	196	196	199	205	205	207
6	16	22	27	37	46	59	205	203	209	209	214	215
7	41	49	60	62	66	59	190	192	197	203	207	206
8	26	36	33	38	37	41	205	207	215	218	219	219
9	19	25	13	37	42	47	201	203	202	211	214	218
10	-	26	0.6	37	35	42	-	204	207	212	216	218
11	36	35	42	52	56	58	186	188	191	198	198	203
12	30	33	44	51	58	59	196	199	205	212	211	213
13	11	11	11	15	25	39	201	203	210	215	213	218
14	12	18	29	35	50	54	209	215	213	217	220	224
15	42	42	50	58	66	74	184	187	188	197	204	207
16	34	46	54	55	61	73	210	210	214	218	221	222
17	54	65	74	70	74	75	174	177	178	190	191	193
18	48	52	59	61	64	76	180	190	189	195	195	196
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HCFA Region												
Boston	26	29	38	39	46	53	200	202	205	210	213	213
Dallas	21	27	32	37	44	50	202	204	209	212	215	217
Kansas City	28	30	26	44	48	51	194	199	201	208	210	213
Seattle	45	52	59	61	66	74	186	190	192	200	202	205
US	29	32	37	44	50	56	196	200	203	208	210	212

[^]Sixteen Network areas participated in the first ESRD Core Indicators assessment (October-December 1993; all Network areas participated in subsequent years.

- data not available

Boston HCFA Region contains Networks 1-5.

Dallas HCFA Region contains Networks 6-8, 13-14.

Kansas City HCFA Region contains Networks 9-12.

Seattle HCFA Region contains Networks 15-18.

Table 5: Trends in hematocrit by Network, HCFA Region, and US 1993-1998[^]

Network	Percent of patients with mean hematocrit>30%						mean hematocrit (%)						SHR ('96-'98)	SMR ('96-'98)
	'93	'94	'95	'96	'97	'98	'93	'94	'95	'96	'97	'98		
1	55	62	73	79	84	84	31.4	31.9	32.5	33.2	33.4	34.4	1.01	0.92
2	-	53	60	70	78	83	-	31.1	31.6	32.8	33.2	34.0	0.99	0.97
3	43	53	61	70	80	79	30.3	31.1	31.8	32.6	33.4	34.1	1.10	1.06
4	52	57	72	76	85	85	31.2	31.4	32.7	32.9	33.6	34.8	1.14	1.03
5	43	58	66	71	76	78	30.3	31.2	31.8	32.4	33.1	33.9	1.05	1.06
6	37	45	52	73	76	82	29.6	30.4	31.2	32.8	32.9	34.2	1.08	1.04
7	48	61	66	71	82	83	30.7	31.6	32.2	32.9	33.4	34.3	1.02	1.01
8	37	46	54	68	72	82	29.7	30.4	31.3	32.5	32.6	34.0	1.04	1.04
9	46	52	61	72	78	83	30.4	31.4	31.8	33.0	33.1	34.2	1.05	1.06
10	-	50	60	68	77	78	-	31.4	31.6	32.0	33.1	33.7	1.07	1.04
11	49	58	65	69	76	82	30.7	31.5	32.3	32.4	32.9	34.0	0.94	0.97
12	48	65	69	72	82	85	30.5	32.0	32.0	32.5	33.5	34.6	0.97	1.01
13	46	53	53	65	72	81	30.3	31.3	31.1	32.1	32.8	33.9	1.18	1.13
14	46	56	62	69	76	86	30.3	31.2	31.9	32.6	33.0	34.8	0.99	0.91
15	56	59	69	74	80	86	31.3	31.8	32.7	33.2	33.6	34.8	0.91	0.92
16	64	67	75	85	85	87	32.0	32.3	32.9	33.9	33.8	34.4	0.86	0.98
17	48	56	64	78	84	84	30.5	31.2	31.8	33.3	33.8	34.3	0.94	0.99
18	49	57	64	79	83	86	30.5	31.9	32.0	32.8	33.6	34.4	0.95	0.89
HCFA Region														
Boston	48	57	66	73	80	82	30.8	31.3	32.0	32.8	33.3	34.2	1.05	1.01
Dallas	43	52	57	69	76	83	30.1	31.0	31.5	32.6	32.9	34.2	1.05	1.01
Kansas City	48	56	64	70	78	82	30.5	31.6	31.9	32.5	33.1	34.1	1.01	1.02
Seattle	54	60	68	79	83	86	31.0	31.8	32.3	33.3	33.7	34.5	0.93	0.94
US	46	55	63	72	79	83	30.5	31.3	31.9	32.7	33.2	34.3	1.02	1.00

[^]Sixteen Network areas participated in the first ESRD Core Indicators assessment (October-December 1993; all Network areas participated in subsequent years.

- data not available

Boston HCFA Region contains Networks 1-5.

Dallas HCFA Region contains Networks 6-8, 13-14.

Kansas City HCFA Region contains Networks 9-12.

Seattle HCFA Region contains Networks 15-18.

Table 6: Trends in iron management measures by Network, HCFA Region, and US, 1996-1998

Network	Percent of patients with transferrin saturation \$20%			Percent of patients with serum ferritin concentration \$100ng/mL			Percent of patients with IV Iron prescribed		
	'96	'97	'98	'96	'97	'98	'96	'97	'98
1	64	71	70	75	76	77	50	59	56
2	53	66	69	60	73	74	39	48	46
3	63	68	66	71	80	78	44	60	58
4	66	70	45	75	79	58	55	54	62
5	62	69	74	70	80	77	48	52	50
6	62	73	75	74	85	78	58	61	63
7	62	72	73	76	81	84	58	59	55
8	58	70	64	77	84	83	50	58	55
9	58	64	41	72	79	73	60	67	70
10	65	75	62	70	77	73	47	61	60
11	62	68	66	70	83	80	52	61	60
12	55	62	59	69	83	79	48	51	60
13	60	69	65	78	84	81	60	63	68
14	71	74	79	80	86	81	54	62	59
15	75	73	63	72	80	82	58	54	59
16	49	68	66	63	78	82	55	57	66
17	67	69	66	79	89	85	46	53	59
18	66	74	72	80	81	86	38	49	60
HCFA Region									
Boston	62	69	65	70	78	73	47	54	54
Dallas	62	71	71	77	84	81	56	61	60
Kansas City	60	67	57	70	80	76	52	60	62
Seattle	65	71	67	74	82	84	49	53	61
US	63	70	66	73	81	78	51	57	59

Boston HCFA Region contains Networks 1-5.

Dallas HCFA Region contains Networks 6-8, 13-14.

Kansas City HCFA Region contains Networks 9-12.

Seattle HCFA Region contains Networks 15-18.

Table 7: Trends in Epoetin dosing by Network, HCFA Region and US, 1993-1998[^]

Network	mean weekly Epoetin dose (units/kg/week)*								
	'93*	'94**	'95**	'96IV+	'96SC++	'97IV	'97SC	'98IV	'98SC
1	-	170	183	203	134	183	199	218	175
2	-	196	234	243	201	232	154	199	200
3	-	178	227	226	145	222	167	253	167
4	-	185	211	214	208	212	199	274	220
5	-	179	206	205	162	198	193	209	160
6	-	159	155	193	179	200	164	202	200
7	-	192	168	219	281	199	154	205	158
8	-	166	165	191	149	206	166	188	207
9	-	166	207	184	226	213	200	234	205
10	-	149	176	182	138	187	161	226	182
11	-	157	157	195	188	168	203	173	155
12	-	204	229	226	201	211	148	212	161
13	-	149	165	195	183	176	189	196	170
14	-	163	155	183	215	187	136	201	214
15	-	158	138	188	204	156	144	173	113
16	-	189	160	199	204	198	190	202	173
17	-	200	191	209	165	187	139	203	145
18	-	184	208	213	218	187	141	195	220
HCFA Region									
Boston	-	182	212	218	175	209	182	226	191
Dallas	-	166	161	197	189	194	163	199	198
Kansas City	-	169	192	197	197	193	183	210	182
Seattle	-	183	175	202	200	181	163	193	174
US	-	174	186	204	193	197	172	208	187

[^]Sixteen Network areas participated in the first ESRD Core Indicators assessment (October-December 1993; all Network areas participated in subsequent years.

*Epoetin dose was not collected the first Project year

**Route of Epoetin administration was not collected for the first three Project years

+ IV=intravenous

++ SC=subcutaneous

Boston HCFA Region contains Networks 1-5.

Dallas HCFA Region contains Networks 6-8, 13-14.

Kansas City HCFA Region contains Networks 9-12.

Seattle HCFA Region contains Networks 15-18.

Table 8: Trends in serum albumin by Network, HCFA Region, and US 1993-1998[^]

Network	Percent of patients with mean serum albumin \$3.5/3.2gm/dL*						Percent of patients with mean serum albumin\$4.0/3.7gm/dL**						SHR ('96-'98)	SMR ('96-'98)
	'93	'94	'95	'96	'97	'98	'93	'94	'95	'96	'97	'98		
1	74	74	82	82	79	83	20	27	34	34	37	37	1.01	0.92
2	-	82	82	81	84	82	-	34	36	34	42	40	0.99	0.97
3	78	79	78	83	83	80	31	33	35	34	37	34	1.10	1.06
4	78	77	84	79	86	81	22	26	34	28	40	37	1.14	1.03
5	77	81	87	81	84	83	28	33	41	32	39	40	1.05	1.06
6	84	80	89	86	85	84	35	30	41	36	40	36	1.08	1.04
7	81	82	87	84	84	85	31	29	39	33	31	41	1.02	1.01
8	80	82	86	86	85	84	27	35	37	33	41	42	1.04	1.04
9	80	77	82	79	86	81	25	21	37	28	38	36	1.05	1.06
10	-	77	80	76	78	81	-	30	31	24	35	36	1.07	1.04
11	78	78	79	77	79	77	22	27	32	31	29	30	0.94	0.97
12	75	78	79	80	83	78	25	23	32	33	36	32	0.97	1.01
13	78	82	83	81	82	82	31	27	37	37	39	39	1.18	1.13
14	82	81	86	82	84	84	25	38	40	33	32	34	0.99	0.91
15	77	79	87	82	83	83	19	22	43	32	38	36	0.91	0.92
16	67	71	78	76	76	72	19	22	25	26	28	23	0.86	0.98
17	74	77	82	83	85	84	22	29	37	33	35	42	0.94	0.99
18	74	83	81	82	87	85	31	32	36	36	39	36	0.95	0.89
HCFA Region														
Boston	77	79	83	81	83	82	25	30	36	32	39	37	1.05	1.01
Dallas	81	82	86	84	84	84	30	32	39	34	37	38	1.05	1.01
Kansas City	78	78	80	78	82	79	24	25	33	29	34	34	1.01	1.02
Seattle	74	78	82	81	83	81	23	27	35	32	35	34	0.93	0.94
US	78	80	84	81	83	82	27	30	37	32	37	37	1.02	1.00

[^]Sixteen Network areas participated in the first ESRD Core Indicators assessment (October-December 1993; all Network areas participated in subsequent years.

*3.5gm/dL by bromcresol green laboratory measure/3.2gm/dL by bromcresol purple laboratory measure

**4.0gm/dL by bromcresol green laboratory measure/3.7gm/dL by bromcresol purple laboratory measure

- data not available

Boston HCFA Region contains Networks 1-5.

Dallas HCFA Region contains Networks 6-8, 13-14.

Kansas City HCFA Region contains Networks 9-12.

Seattle HCFA Region contains Networks 15-18.

Figure 2: Percent of Patients with mean Kt/V ≥ 1.2 (1996, 1997, & 1998) and mean hemoglobin > 10 gm/dL (1997 & 1998) by Network

